



Mercury in Northern Pike from Koyukuk, Nowitna and Innoko National Wildlife Refuges

U.S. Fish and Wildlife Service and Alaska Dept. of Health and Social Services – Division of Public Health



Why are we concerned about mercury?

Mercury is a neurotoxin - at high levels it can damage the developing brains of babies (including babies in the womb) and children. Mercury levels in most Alaska fish are low, so any health effects would be very subtle. Still, health officials recommend a margin of safety to protect our children's health.

Should I worry about eating fish?

Overall, mercury levels in Alaska fish are low, so the **only** people who need to think about limiting the amount of fish they eat are **women who are or can become pregnant, nursing mothers, and children age 12 years and under**. Women and children can still get the benefits of eating fish by choosing to eat fish that are low in mercury, like salmon.

Men, elders, and teenage boys may eat unlimited amounts of most Alaska fish, including pike.

The State of Alaska has developed guidelines for women and children on how much of each fish they can safely eat, based on the amount of mercury in a variety of fish species. These guidelines:

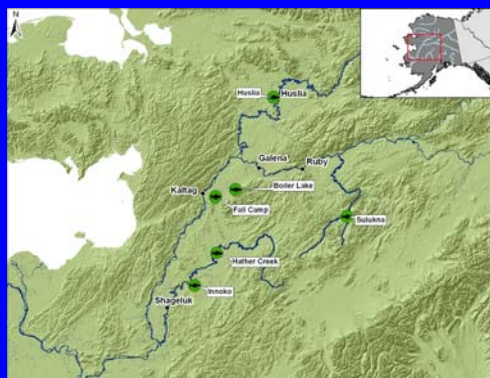
- Reflect guidelines developed by other states and national agencies.
- Incorporate studies of dietary mercury effects on children.
- Include a large safety factor, so do not have to be viewed as strict dietary limits.

Why study mercury in pike?

There is more of the toxic form of mercury – methylmercury – in fish that eat other fish and in older fish, like large pike. In this study, we measured mercury in pike muscle, from pike caught at traditional and well-used subsistence fishing sites. We are sharing this information with you because you live in an area where people eat a lot of pike.

In 2006, with the help of subsistence fishermen, we collected 75 pike from six sites on the Yukon and Innoko Rivers, in Koyukuk, Nowitna, and Innoko National Wildlife Refuges.

Sample sites from Koyukuk, Nowitna and Innoko National Wildlife Refuges (2006).



How much pike from the mid-Yukon River area should women and children eat?

Methylmercury concentration in fish (mg/kg)	Meals per month	Area, size of pike
0 - 0.15	Unlimited	
>0.15 - 0.32	up to 16	
>0.32 - 0.40	up to 12	Mid-Yukon < 2ft
>0.40 - 0.64	up to 8	Mid-Yukon > 2 ft
>0.64 - 1.2	up to 4	
>1.2 - 1.4	up to 3	
>1.4 - 2.0	up to 2	
>2.0 - 3.4	up to 1	

The most recent (2007) guidelines, *Fish Consumption Advice for Alaskans: A Risk Management Strategy to Optimize Public Health*, is available at: http://www.epi.hss.state.ak.us/bulletins/docs/rr2007_04.pdf.

For pike from Koyukuk, Nowitna, and Innoko National Wildlife Refuges (the mid-Yukon area), the recommendations for women and children are:

Mid-Yukon River area pike *shorter than 2 feet* may be eaten in up to 12 meals per month, when eaten fresh.

Mid-Yukon River area pike *longer than 2 feet* may be eaten in up to 8 meals per month, when eaten fresh.

A "meal" is one six-ounce portion of fish.

Notes: Small pike (< 2 feet long) often have less mercury than large pike (> 2 feet long). Also, dried pike has a higher mercury concentration than fresh pike (the mercury is "diluted" with the water in the fresh pike).

Where does mercury in Alaska come from?

- **Anthropogenic (human-caused) sources** such as global air pollution from burning fuels and garbage, and mining runoff
- **Natural sources** such as forest fires, volcanoes, and local bedrock weathering into streams

Mercury gets into wetlands where it is transformed by bacteria into *methylmercury*. From there, it accumulates in fish and animals.

For more information on mercury in pike contact Angela Matz (angela_matz@fws.gov, 907-456-0442), U.S. Fish and Wildlife Service, 101-12th Ave., Room 110, Fairbanks, AK 99701.

Measuring Mercury in Humans

Although mercury concentrations in fish can give us an idea of possible mercury exposure, Alaska has a program that tests for actual mercury levels in humans. **If you are a woman of child-bearing age, you can get your hair tested and find out your own mercury levels – for free!**

The Alaska Division of Public Health will analyze a small hair sample from any Alaskan woman of child-bearing age for mercury. Hair collection is done by a health care provider, and results are sent to the woman and her health care provider within two months. If you are one of the very few women in Alaska who has a high hair mercury level, the Alaska Division of Public Health and your health care provider will work with you to help reduce your mercury exposure.



A simple hair test can tell you how much mercury you may have in your body. For more information on hair mercury monitoring, or to arrange for testing, contact the Environmental Public Health Program at the Alaska Division of Public Health, 3601 C Street, Suite 540, Anchorage, AK 99503, 907-269-8000, <http://www.epi.hss.state.ak.us/eh/default/stm>

When Deciding What to Eat, Remember...

Subsistence foods, including almost all fish, are better for you and less expensive than store-bought foods. Also, the subsistence way of life helps keep Alaska Native cultures healthy and traditional ways alive.

Fish are nutritious, with vitamins A, E, and C, iron, zinc, protein, and very important omega-3 fatty acids. These nutrients help keep your nervous system, your immune system, and your heart healthy, and are important for a healthy pregnancy.

Subsistence foods are low in sugar and saturated fats. Store-bought foods can have unhealthy amounts of sugars and fats, which can contribute to obesity and diabetes, both of which are at epidemic levels in Alaskans, and heart disease. All these diseases are increasing among Alaska Natives.

Most subsistence foods are very clean. For example, all five species of Alaska salmon have very low contaminant levels and are safe to eat in unlimited quantities.

For more information on fish consumption guidelines, or the benefits of eating subsistence foods, contact the Environmental Public Health Program, 907-269-8000, Alaska Division of Public Health, 3601 C Street, Suite 540, Anchorage, AK 99503.